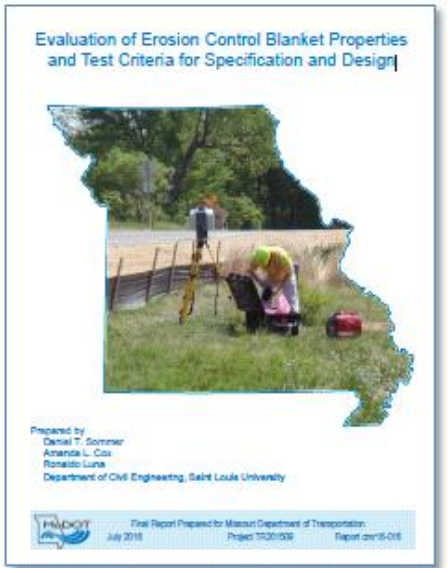
For more information contact: Bill Stone (573) 526-4328

Research Summary

Evaluation of Erosion Control Blankets for Specification and Design

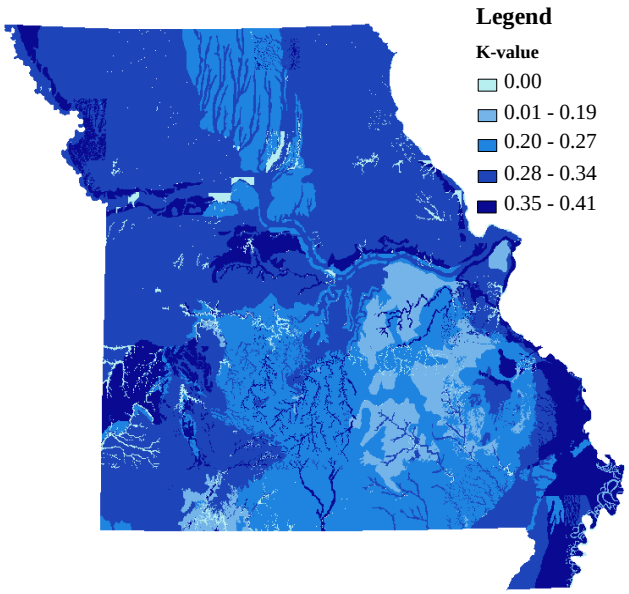


To meet federal compliances with the Clean Water Act, erosion control blankets (ECB) are commonly installed on construction sites to control stormwater erosion and assist with reestablishing vegetation following land disturbances along highways. A research project to investigate the product approval, design process, and ongoing product evaluation of ECBs was conducted. A field investigation was established to study the effectiveness of two ECBs on a MoDOT construction site. Completed MoDOT construction sites, which utilized ECBs, were also included in the investigation to evaluate how well vegetation was sustained and monitor ongoing blanket degradation following site completion. Surveys were developed and administered to record contractor and MoDOT employee ECB experiences and identify common problems and successful practices using ECBs. Recommendations for ECB approval procedures and a design process for conditions representative of Missouri were developed using insight gained through the study of common ECB product acceptance and design, field site investigations, evaluation of completed construction sites, and surveys of ECB experiences.

The National Transportation Product Evaluation Program's ASTM standardized testing was recommended as the basis for product approval.

The Revised Universal Soil Loss Equation (RUSLE) was used as the foundation for the ECB design process and minimum performance requirements were established from existing literature. Extensive geologic information was used to develop a GIS digital map of erodibility for the state of Missouri. Erosivity maps were also developed for Missouri and a map of the product of erodibility and erosivity was developed. Generalized values of this product for the different physiographic regions of Missouri were used to develop ECB design matrices. An ongoing product evaluation system was also developed for ECBs to document field performance and assist in identifying ECBs that should be removed from the approved products list. Specific input for the Engineering Policy Guide (EPG) was provided and a training program was developed for MoDOT personnel to design appropriate ECB solutions.

Successful implementation of ECBs is dependent on appropriate selection, installation, and maintenance.



Missouri Soil Erodibility (K) Values

Design process integrates RUSLE principles with product approval specifications.

Zone 1							
Type	Name	5:1			4:1		
		0-40'	40-80'	80'+	0-40'	40-80'	
1A	Mulch Control Nets	———	———	———			
1B	Netless Rolled Erosion Control Blankets	- - -	- - -	- - -	———	———	
1C	Light-Weight Double Net Erosion Control Blankets	- - -	- - -	- - -	- - -	- - -	
1D	Heavy Double-Net Erosion Control Blankets	- - -	- - -	- - -	- - -	- - -	
2A	Mulch Control Nets	———	———	———			
2B	Netless Rolled Erosion Control Blankets	- - -	- - -	- - -	———	———	
2C	Light-Weight Double Net Erosion Control Blankets	- - -	- - -	- - -	- - -	- - -	
2D	Heavy Double-Net Erosion Control Blankets	- - -	- - -	- - -	- - -	- - -	
3A	Mulch Control Nets	———	———	———			

Section of ECB Design Matrix for Zone 1

Project Information

PROJECT NAME: Evaluation of Erosion Control Blankets for Specification and Design

PROJECT START/END DATE: January 1, 2015 through June 30, 2016

PROJECT COST: $100,000

LEAD CONTRACTOR: Saint Louis University

PRINCIPAL INVESTIGATOR: Dr. Amanda Cox, P.E.

REPORT NAME: Evaluation of Erosion Control Blanket Properties and Test Criteria for Specification and Design

REPORT NUMBER: cmr 16-016

REPORT DATE: July 2016

Project Manager

BILL STONE, P.E.

Research Administrator
Missouri Dept. of Transportation
Construction and Materials
Research Section
1617 Missouri Blvd
Jefferson City, MO 65109
Ph. (573) 526-4328
Email William.Stone@modot.mo.gov